Engineering Passion Projects For All Learners

Ignite the personal interests of gifted, 2e and struggling students by building passion projects alongside them

Hello

What drives you?

What are your passions?

Why do you pursue interests in certain areas?

How do you learn best?

What do you care most about?

What is your *sine qua non*?

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Activity 1

Name ONE thing that you love or are passionate about, continue to learn more about and enjoy talking with others about. Why are you so interested in this?

I 💖 National Parks

- Outdoor Activities - Hiking, Camping, Canoeing
- Natural Wonders & Landscapes
- Travel to Different Parts of the Country
- Photographic Interests
- Place-Based Learning Aspects

I have visited 16 National Parks to date.

Activity 2

Think of your Curriculum, a Unit and its corresponding objectives and/or standards. What does your typical assessment look like? Does it meet the needs of all the students in your class? Is it designed for all to be successful?

Meet My Real Students

Roman*

- 16-year-old sophomore
- Passionate about Outdoors
  - Fishing in particular
- Hands-on Learner
- Average to underachieving grades in his classes
- Struggling Learner, OCD

Leo*

- 14-year-old freshman
- Passionate about Aviation
  - Pilots License
- Passionate about Reading
- IEP in Place for Math
- GIEP Goal in Place for ELA
- 2E Student

Meet Our Sample Students

Peter

- 17-year-old junior
- Passionate about Sports
  - Baseball in particular
- Passionate about Music
  - Guitar in particular
- Average to underachieving grades in his classes

Paige

- 14-year-old freshman
- Passionate about Food
  - Desserts in particular
- Passionate about Fashion
  - Loves to shop
- More concerned about fitting in than with grades

Activity 3

Now develop as many product options as you can for Peter and/or Paige for that same unit from Activity 2. Use a separate Post-It for each product option.

Lesson 1: Know Thy Student

The 5 things secondary students want are:

CONTROL, CHOICES, CHALLENGE, COMPLEXITY and **CARING**.

Activity 4

Now come and grab one of the large sheets that attendees just put up and create a new product idea for that person based on this passion area.

"One assessment option for students just doesn't cut it any longer. Interest-based and strength-based pedagogy is here. Build your curricula and assessments around this."

- Me (just now)

Lesson 2: Brains Need Down Time

This is true for kids and adults.

Let's take a quick brain break.

Using Iterative Design for Passion Projects

The Iterative Design Process - Pared Down

DEFINITIONS

FORMULATE (Ideate)

This is the idea generating phase that addresses a problem identified through research and empathetic understanding.

TEST (Prototype)

Build it, build it, build it. This is where concepts, systems, designs are considered and tested. Prototypes are easy and cheap to design allowing testing and refining quickly.

EVALUATE (Analyze)

Gather the feedback. Find out what works and what doesn't work. Did your assumptions meet the needs of the user? Take your new found knowledge and repeat the design cycle.

Activity 5

Develop the shell of a project that you can incorporate into a Unit/Strand that will allow your students to fail quickly and fail often.

Lesson 3: Failure Results in Learning

IDEO U states that “there’s something powerful about it (failure) when you lean into it with others. It helps build courage, confidence, and important risk-seeking behaviors.”

Meet My Real Student

Chris*

- ✘ 15-year-old sophomore
- ✘ Passionate about Engineering & Design
  - ✗ Industrial Design in particular
- ✘ Hands-on Learner, Maker-Mentality
- ✘ Non-traditional approach to studies
- ✘ GIEP, Math-Science Strengths

Meet Peter's & Paige's Younger Brother

Jason aka "Master of Iteration"

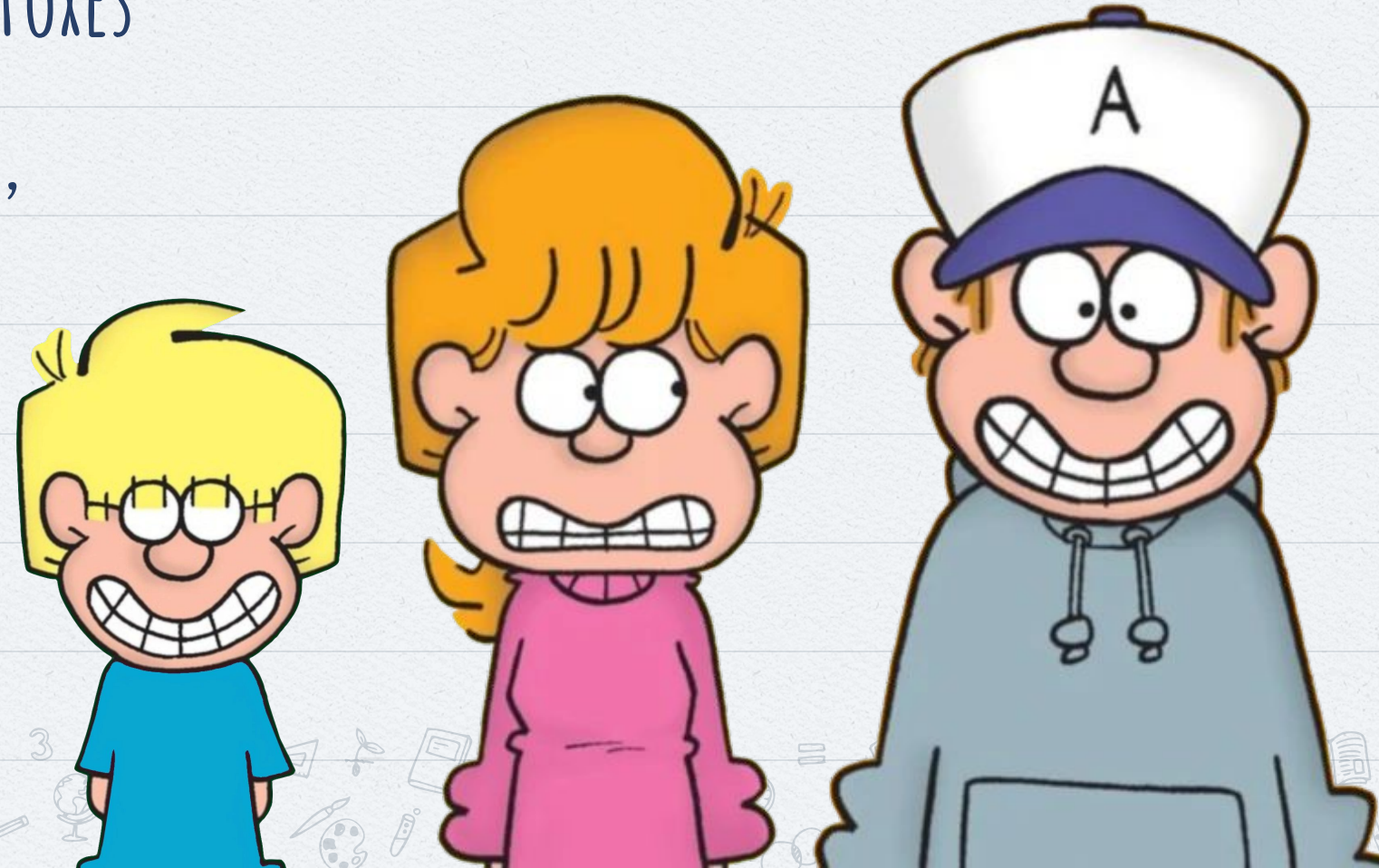
- 10-year-old, all-around gifted 5th grader
- Passionate about STEM Fields
  - Math in all forms in particular
  - Computer Science/Programming in particular
  - Rocketry/Engineering in particular
- Overachieving student with grades at or above 100% in all subjects. Working anywhere from 3-5 grade levels ahead

Activity 6

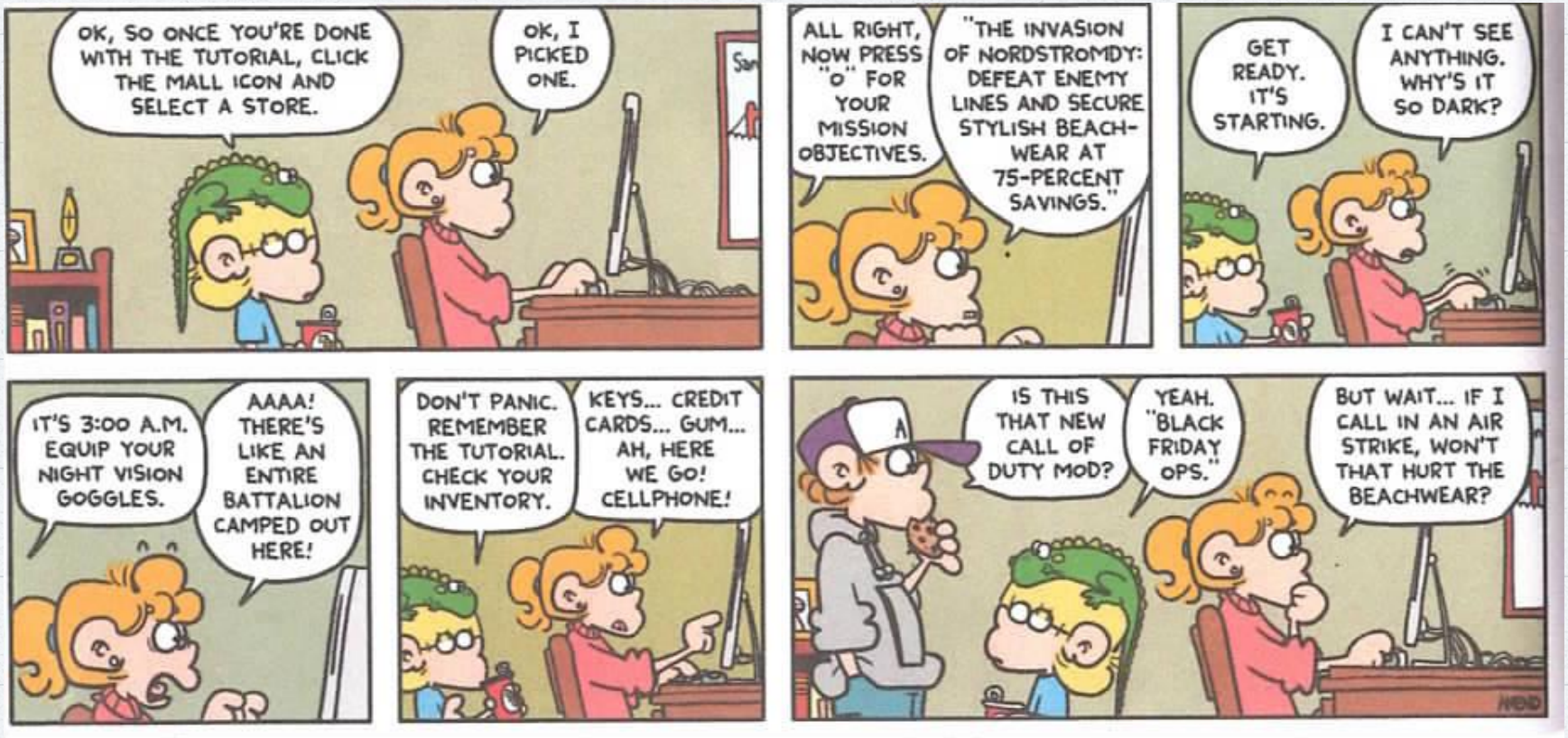
Develop the shell of a passion project that you can present to Jason as an optional assessment.

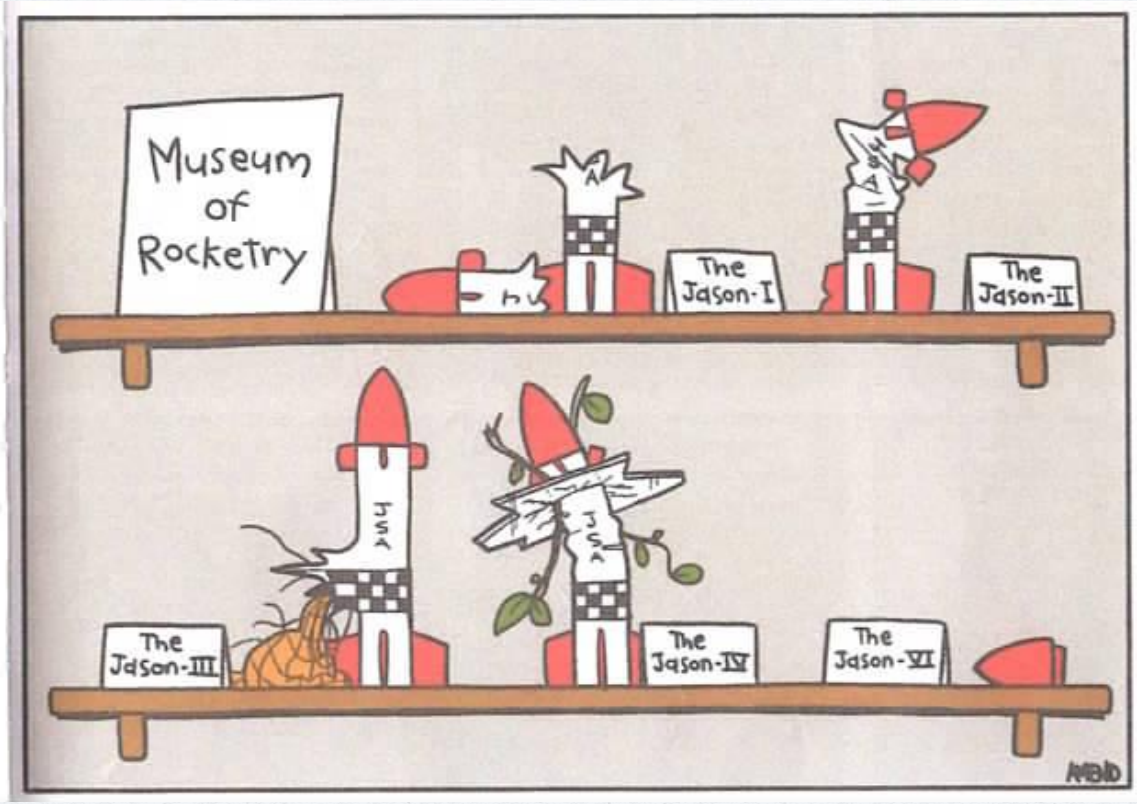
The "Real" Foxes

Peter, Paige, & Jason




I THINK THIS IS GOING TO BE THE SEMESTER, MOM.
WHAT ARE YOU TALKING ABOUT?
THE SEMESTER WHERE I FINALLY HAVE A DECENT SHOT AT KICKING TAIL IN THE GRADES DEPARTMENT.
IT'S LIKE THE PLANETS HAVE ALL LINED UP JUST RIGHT! I'VE GOT CLASSES I LIKE... TEACHERS I LIKE...
AND THE FINAL PIECE OF EVIDENCE: MY FIRST ESSAY ASSIGNMENT IS "PRO SPORTS"! MY SPECIALTY!
THIS IS THE SEMESTER I'VE BEEN WAITING FOR! THE ONE THAT TURNS THE TIDE! THAT SALVAGES MY G.P.A.! THAT GETS ME INTO HARVARD!
WELL, IVY BOY, YOU'D BEST GET STARTED ON THAT ESSAY.
NO TIME. I'VE GOT TO GO CELEBRATE.


OK, SO ONCE YOU'RE DONE WITH THE TUTORIAL, CLICK THE MALL ICON AND SELECT A STORE.
OK, I PICKED ONE.
ALL RIGHT, NOW PRESS "O" FOR YOUR MISSION OBJECTIVES.
"THE INVASION OF NORDSTROMDY: DEFEAT ENEMY LINES AND SECURE STYLISH BEACH-WEAR AT 75-PERCENT SAVINGS."
GET READY. IT'S STARTING.
I CAN'T SEE ANYTHING. WHY'S IT SO DARK?
IT'S 3:00 A.M. EQUIP YOUR NIGHT VISION GOGGLES.
AAAA! THERE'S LIKE AN ENTIRE BATTALION CAMPED OUT HERE!
DON'T PANIC. REMEMBER THE TUTORIAL. CHECK YOUR INVENTORY.
KEYS... CREDIT CARDS... GUM... AH, HERE WE GO! CELLPHONE!
IS THIS THAT NEW CALL OF DUTY MOD?
YEAH. "BLACK FRIDAY OPS."
BUT WAIT... IF I CALL IN AN AIR STRIKE, WON'T THAT HURT THE BEACHWEAR?


Museum of Rocketry
The Jason-I
The Jason-II
The Jason-III
The Jason-IV
The Jason-VI
ARBID


I TAKE IT THE "JASON-V" WAS THAT ONE THE POLICE CONFISCATED?
YEAH. AT LEAST I GOT TO MEET THEIR S.W.A.T. TEAM.


OUR BROTHER IS SO WEIRD.
WHAT'S HE DOING NOW?
HE'S MAKING INSTRUCTIONAL VIDEOS OF HIMSELF WHILE HE DOES HIS MATH HOMEWORK.
I GUESS HE READ SOMETHING ABOUT POPULAR YOUTUBERS MAKING MILLIONS OF DOLLARS.
WHOA.
BUT MATH??? HOW CAN YOU POSSIBLY MAKE MATH INSTRUCTION POPULAR???
HE SAYS HE'S DOING THEM ARTISTICALLY OR SOMETHING. HE WAS FIDDLING WITH HIS HAIR IN THE BATHROOM, SO IT WAS KINDA HARD TO HEAR HIM.
SINCE WHEN DOES JASON CARE ABOUT HIS HAIR?
NOW, LET'S MOVE THIS HAPPY LITTLE DECIMAL POINT OVER TWO PLACES...


Cran-Grape
WRRGLRZGRR
TONIGHT'S THE SEASON PREMIERE OF "DEXTER" SO I'M ANALYZING SPATTER PATTERNS AS A TRIBUTE.
I SUPPOSE THERE ARE FAR WORSE WAYS YOU COULD PAY TRIBUTE.
A ?
AMEND

Don't Hesitate to Contact Me for Assistance with These Concepts. Thanks and Have a Great School Year!

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